Artificial intelligence planning historical developments

This article is about three of the most important historical developments in artificial intelligence planning: STRIPS, planning graph and heuristic search planner.

STRIPS

One of the first historical research used in artificial intelligence planning is Standford research institute problem solver (STRIPS). A classical planning language developed by Richard Fikes and Nils Nilsson in 1971 at SRI International and used in a robot called Shakey witch was the first robotic device to reason about its own actions. STRIPS has a big impact on the field of artificial intelligence because it has built the base of most planning problems languages. It compose each instance to an initial state, a specification of the goal states that the planner is trying to reach and a set of actions and operators that combines: preconditions which must be fulfilled before starting the action and postconditions that represent the effects of performing these actions.

Planning Graph

An other important research in AI planning is planning graph. It is an automated planning algorithm in STRIPS-like domains, developed by Avrim Blum and Merrick Furst in 1995. Referred by the name GraphPlan, it encodes the planning problem in such a way that many useful constraints inherit in the problem become explicitly available to reduce the amount of search needed witch helps to pruning nodes and leads to minimizing the search time.

Heuristic search planner (HSP)

HSP is a planner based on the ideas of heuristic search developed in 1998. The algorithm estimate the distance between an initial state and a goal state using an heuristic function that helps to deal with any STRIPS planning problem as a problem of heuristic search. The HSP algorithm estimates the optimal value of the relaxed problem and automatically extracting heuristics from the STRIPS encoding.

To conclude, STRIPS is a very important development in the field of Artificial Intelligence planning and constitute the base of further research in the field. With Graphplan , the planner started to implement new optimal planning techniques. And with HSP algorithm, it implemented automated approach for determining heuristics to general planning problems.

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